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| 09/912,112 | 07/23/2001 | Tetsuya Ishikawa | AMAT/1570.C2/DD/HDP/CVD/J | 4580 |
| 32588 | 7590 | 12/19/2005 | | |
| APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050 | | | EXAMINER ZERVIGON, RUDY | |
| | | | ART UNIT | PAPER NUMBER |

1763

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,112

Applicant(s)

ISHIKAWA ET AL.

Examiner

Rudy Zervigon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. 20051130.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show 34 (chamber lid assembly) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character “98” has been used to designate both “substrate receiving portion” (specification) and “substrate receiving member” (claims). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “base member” must be shown or the feature canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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5. Claims 15-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicant claims an “electrically symmetric” processing enclosure. The specification is incomplete in the description of Applicant’s term.

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 15-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. The term “electrically symmetric” in claim 15 is a relative term which renders the claim indefinite. The term “electrically symmetric” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Applicant’s “electrically symmetric” quality / material attribute is a material attribute with respect to what property of electricity? Continuity? Resistivity? Impedence??....etc...

Claim Rejections - 35 USC § 102

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 15-31 are rejected under 35 U.S.C. 102(e) as being anticipated by van Os, Ron et al. (US 5,792,272 A). van Os teaches an “electrically symmetric” processing enclosure,

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comprising; a chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) defining an annular interior processing region (18; Figure 2; column 3, lines 30-56), the annular processing region (18; Figure 2; column 3, lines 30-56) tapering (portion 17, ; Figure 2; column 3, lines 30-56) towards a lower end (portion 16, ; Figure 2; column 3, lines 30-56); an exhaust passage (25; Figure 6; column 10, lines 1-12) concentrically positioned in the lower end (portion 16, ; Figure 2; column 3, lines 30-56) of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56); a cantilever mounted (21; Figure 2; column 8, lines 8-34) annular substrate support member (20; Figure 6; column 10, lines 1-12) affixed to the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) at a position above and concentric to the exhaust passage (25; Figure 6; column 10, lines 1-12); and a lid member (15; Figure 3A; column 5, lines 33-46) disposed over an annular open top portion (15; Figure 2) (11,12; Figure 2,6) of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56); the lid member (15; Figure 3A; column 5, lines 33-46) having an energy transmitting dome (27; Figure 2), energy delivery assembly (13; Figure 2; column 5, lines 16-32), and a temperature control assembly (column 6, lines 11-26) mounted thereto, as claimed by claim 15.

With regard to Applicant's "electrically symmetric" term and Applicant's support therefor in the December 3, 2004 response, the Examiner's correspondence of van Os's elements with the claim elements of the pending claims demonstrates a functional correspondence. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (*In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

van Os further teaches:

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- i. The processing enclosure of claim 15, wherein the cantilevered mounted (21; Figure 2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) comprises: a base member (part between 21 and 29; Figure 2) having a flange (29; Figure 2) extending therefrom, the flange (29; Figure 2) being configured to attach to an interior surface of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) and form a smooth surface therewith (see 29/16 interface); at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion extending radially inward from the base member (part between 21 and 29; Figure 2); and a substrate receiving member (20; Figure 2; column 8, lines 8-34) mounted to a distal end of the at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion, the substrate receiving member (20; Figure 2; column 8, lines 8-34) having an annular outer surface, as claimed by claim 16
- ii. The processing enclosure of claim 16, wherein the annular outer surface defines an annular passage between the outer surface and the annular interior processing region (18; Figure 2; column 3, lines 30-56), as claimed by claim 17
- iii. The processing enclosure of claim 16, wherein the at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion includes a substantially hollow interior (72, 73; Figure 5B; column 9, lines 41-55) portion configured to transmit fluids there through, as claimed by claim 18
- iv. The processing enclosure of claim 15, wherein the energy transmitting dome (27; Figure 2) comprises an cylindrical sidewall (27; Figure 2) that is closed at a first end by a flat top (15; Figure 2), wherein the cylindrical sidewall (27; Figure 2) is generally perpendicular to an upper surface of the substrate receiving member (20; Figure 2; column 8, lines 8-

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- 34) and the flat top (15; Figure 2) is generally parallel to the upper surface, as claimed by claim 19
- v. The processing enclosure of claim 19, wherein a junction between the cylindrical sidewall (27; Figure 2) and the flat top (15; Figure 2) is rounded (see flanged portion 41 attached to 12; Figure 3a) to provide a curvilinear inner wall of the energy transmitting dome, as claimed by claim 20
- vi. The processing enclosure of claim 17, wherein the exhaust passage (25; Figure 6; column 10, lines 1-12) is concentrically positioned below the annular passage between the outer surface and the annular interior processing region (18; Figure 2; column 3, lines 30-56) and provides even gas flow through the annular passage (column 10, lines 1-13), as claimed by claim 21
- vii. The processing enclosure of claim 15, wherein the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) includes at least one entry port (29; Figure 7) formed therein, the cantilever mounted (21; Figure 2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) accessing the annular interior processing region (18; Figure 2; column 3, lines 30-56) via the at least one entry port (29; Figure 7), as claimed by claim 22
- viii. 23. An apparatus for processing substrates, comprising: a chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) having an annular inner sidewall (27; Figure 2; column 8, lines 8-34) portion and a bottom portion (25/26; Figure 6); a pumping aperture (25; Figure 6) positioned in a central location in the bottom portion (25/26; Figure 6), the pumping aperture (25; Figure 6) being in fluid communication with a vacuum pump (26;

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Figure 6); an annular substrate support member (20; Figure 6; column 10, lines 1-12) cantilever mounted (21; Figure 2; column 8, lines 8-34) to the sidewall portion, an outer perimeter of the annular substrate support member (20; Figure 6; column 10, lines 1-12) having a radius that is smaller than a radius of the annular sidewall portion; and a lid member (15; Figure 3A; column 5, lines 33-46) configured to close an open top portion (15; Figure 2) (11,12; Figure 2,6) of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56), the lid member (15; Figure 3A; column 5, lines 33-46) including a dome (27; Figure 2) shaped upper portion configured to transmit energy (13; Figure 2; column 5, lines 16-32) there through, as claimed by claim 23

- ix. The apparatus of claim 23, wherein the lid member (15; Figure 3A; column 5, lines 33-46) further comprises an energy delivery assembly (13; Figure 2; column 5, lines 16-32) and a temperature control assembly (column 6, lines 11-26) mounted thereto, as claimed by claim 24
- x. The apparatus of claim 23, wherein the outer perimeter of the annular substrate support member (20; Figure 6; column 10, lines 1-12) and the annular inner sidewall (27; Figure 2; column 8, lines 8-34) cooperatively form an annularly shaped aperture (25; Figure 6) there between, as claimed by claim 25
- xi. The apparatus of claim 23, wherein the pumping aperture (25; Figure 6) is concentrically positioned below the annular substrate support member (20; Figure 6; column 10, lines 1-12), as claimed by claim 26
- xii. The apparatus of claim 23, wherein the substrate support member (20; Figure 6; column 10, lines 1-12) comprises: a base member (part between 21 and 29; Figure 2) having a

- flange (29; Figure 2) extending therefrom, the flange (29; Figure 2) being configured to attach to an interior surface of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) and form a smooth surface therewith; at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) extending radially inward toward a central location in the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) from the base member (part between 21 and 29; Figure 2); and a disk shaped substrate receiving member (20; Figure 2; column 8, lines 8-34) affixed to a distal end of the at least one cantilevered arm (21; Figure 2; column 8, lines 8-34) portion, the substrate receiving member (20; Figure 2; column 8, lines 8-34) having an annular perimeter and a substantially planar upper substrate support surface, as claimed by claim 27
- xiii. 28. The apparatus of claim 23, wherein the dome (27; Figure 2) shaped upper portion comprises a cylindrical sidewall (27; Figure 2) connecting to a top portion (15; Figure 2) at a first end, wherein the cylindrical sidewall (27; Figure 2) is perpendicular to an upper surface of the substrate support member (20; Figure 6; column 10, lines 1-12), as claimed by claim 28
- xiv. The apparatus of claim 23, wherein the energy delivery system comprises at least one coil (13; Figure 2; column 3, lines 30-56) positioned proximate the dome (27; Figure 2) shaped upper portion, as claimed by claim 29
- xv. The apparatus of claim 23, wherein the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) includes a first entry port (29; Figure 7) formed therein, the first entry port (29; Figure 7) being configured to receive the cantilever mounted (21; Figure

2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) there through, as claimed by claim 30

- xvi. The apparatus of claim 30, wherein the cantilever mounted (21; Figure 2; column 8, lines 8-34) substrate support member (20; Figure 6; column 10, lines 1-12) attaches to the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) in a manner that maintains a smooth arc, as claimed by claim 31 - When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Response to Arguments

11. Applicant's arguments filed December 3, 2004 have been fully considered but they are not persuasive.

12. Applicant's response to the Examiner's rejections under 35 USC 112, 1st and 2nd paragraphs are not persuasive. Applicant's claimed "electrically symmetric processing enclosure" remains an ambiguous term not defined in the specification and thus not meeting the written description requirement. As stated in this and the prior action, Applicant's "electrically symmetric" quality / material attribute is a material attribute with respect to what property of electricity? Continuity? Resistivity? Impedence??....etc...

Applicant traverses the Examiner's characterization of van Os's energy transmitting dome (27; Figure 2) as not being a "dome shaped lid". In response, the Examiner cites Applicant's own energy transmitting dome (32 Figure 3) from which the Examiner used to ascertain the scope of

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Applicant's claims. In comparing Applicant's Figure 3 against van Os's energy transmitting dome (27; Figure 2), the Examiner finds sufficient, if not exact, geometric correspondance.

13. Applicant further states:

“

Further, van Os does not teach, show, or suggest an annular interior processing region tapering towards a lower end defining an exhaust passage, and a cantilever mounted substrate at a position above the exhaust passage. as recited in claim 15. The reference teaches an substrate support member (Fig. 6, 20) positioned below the taper, which is not in the lower end of the chamber body, but is above the process chamber (Fig. 6, 16). Withdrawal of the rejection to claim 15, and claims dependent therefrom, is respectfully requested.

“

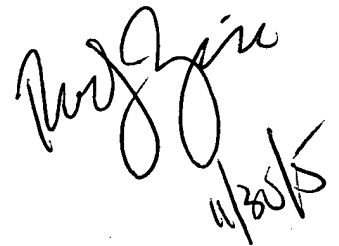
In response, the Examiner reaffirms van Os's annular processing region (18; Figure 2; column 3, lines 30-56) tapering (portion 17, ; Figure 2; column 3, lines 30-56) towards a lower end (portion 16, ; Figure 2; column 3, lines 30-56); an exhaust passage (25; Figure 6; column 10, lines 1-12) concentrically positioned in the lower end (portion 16, ; Figure 2; column 3, lines 30-56) of the chamber body (10, 11, 15-17, 19, ; Figure 2; column 3, lines 30-56) as claimed by claim 15. See van Os's exhaust passage (25; Figure 6; column 10, lines 1-12) meeting all claim limitations.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.



Rudy Zervigon
11/30/15